EXAMINERS AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and /or additions by unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such amendment, it must be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Keith Mullervy and Majid albassam (Reg. No. 54,749) on May 2, 2008.

3. The application has been amended as follows:

Claims 1-4, 8-12, 19-21, 24-25 35-38, and 45-50 have been cancelled

Claims 5, 7, 13, 22-23, 26-27, 31-34, 39, and 51 have been amended.

Claims 52-69 have been newly added.

The changes appear below:

1-4. (Cancelled).

5. (Currently Amended) The method of claim ~~3~~ 14, wherein ~~forwarding link protocol information~~ transferring OSPF network link protocol information is performed by:

creating a hidden OSPF interface for each area of said active processor;

creating a hidden OSPF interface for each area of said standby processor; and

forwarding said ~~link state databases~~ OSPF network link protocol information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor until said link state database of said standby processor is synchronized with said link state database of said active processor.

7. (Currently Amended) The method of claim 5, wherein said OSPF network link protocol information is in the form of Inter Process Control messages.

8-12. (Cancelled).

13. (Currently Amended) A method, comprising:

providing a router having an active processor means and a standby processor means;

building a removable hidden Open Shortest Path First (OSPF) interface on said active processor means and a hidden OSPF interface on said standby processor means for each area during initial synchronization, each area being a group of contagious networks and attached hosts, the hidden OSPF interface on said active processor means and the hidden OSPF interface on said standby processor means being unexposed and at least one hidden adjacency for synchronizing ~~database~~ databases on the active processor means and on the standby processor means being automatically built for each area over the hidden OSPF interface on said active processor means and the hidden OSPF interface on said standby processor means;

connecting said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby processor means over a communications link;

synchronizing an OSPF routing database using an OSPF network link protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor means and said hidden OSPF interface of said standby processor means reach a full adjacency state;

transferring OSPF network link protocol information from said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby

processor means over said communications link to mirror states of said active processor means and said standby processor means by maintaining a synchronization state machine for each task within a protocol;

removing said hidden interface of said active processor means and said hidden interface of said standby processor means; and

assuming control by said standby processor means when a failure is detected in said active processor means and wherein all states of said link protocol immediately function as if the failure had not occurred.

19-21. (Cancelled).

22. (Currently Amended) The system of claim ~~21~~ 40, wherein said unit ~~for forwarding~~ configured to transfer OSPF network link protocol information comprises:

a unit for creating a hidden OSPF interface on for each area of said active processor;

a unit for creating a hidden OSPF interface for each area of said standby processor; and

a unit for forwarding said ~~link state database~~ OSPF network link information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor until said link state database of said standby processor is synchronized with said link state database of said active processor.

23. (Currently Amended) The system of claim 22, wherein said unit ~~for forwarding~~ configured to transfer OSPF network link protocol information comprises forwarding said OSPF configuration information, said OSPF adjacencies information, said OSPF interface information and said OSPF global protocol information using said

hidden OSPF interface of said active processor and said hidden OSPF interface of said standby processor.

24-25. (Cancelled).

26. (Currently Amended) The system of claim ~~19~~ 39, wherein said OSPF network link protocol information is ~~forwarded~~ transferred through said redundant card manager.

27. (Currently Amended) The system of claim 26, further comprising a task manager for determining said OSPF network link protocol states of said tasks and ~~forwarding~~ transferring said OSPF network ink protocol states to said redundant card manager.

31. (Currently Amended) The system of claim 26, wherein said state of said tasks enters an OSPF_FAULT_SYNC state during forwarding of said OSPF network link protocol information from said active processor to said standby processor, said OSPF network link protocol information comprising link-state database information, Open Shortest Path First (OSPF) configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information.

32. (Currently Amended) The system of claim 26, wherein said state of said tasks enters an OSPF_FAULT_FULL state after said ~~forwarding~~ transferring OSPF network link protocol information, said OSPF ~~FAULTJULL~~FAULT_FULL state is a hot standby state wherein said standby state can immediately take over all operations of said standby processor.

33. (Currently Amended) The system of claim ~~19~~ 39, wherein said active processor is an active Open Shortest Path First (OSPF) control card.

34. (Currently Amended) The system of claim ~~19~~ 39, wherein said standby processor is a standby Open Shortest Path First (OSPF) control card.

35-38. (Cancelled).

39. (Currently Amended) A system, comprising:

an active processor unit;

a standby processor unit;

a unit configured to build a removable hidden Open Shortest Path First (OSPF) interface on said active processor unit and a hidden OSPF interface on said standby processor unit for each area during initial synchronization, each area being a group of contagious networks and attached hosts, the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit being unexposed and at least one hidden adjacency for synchronizing ~~database~~ databases on the active processor unit and on the standby processor unit being automatically built for each area over the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit;

a unit configured to connect said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over a communications link;

a unit configured to synchronize an OSPF routing database using an OSPF network link protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor unit and said hidden OSPF interface of said standby processor unit reach a full adjacency state;

a unit configured to transfer OSPF network link protocol information from said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over said communications link to mirror states of said active processor unit and standby processor unit;

a redundant card manager to maintain a synchronization state machine of said states for tasks of said OSPF protocol;

a unit configured to remove said hidden interface of said active processor unit and said hidden interface of said standby processor unit; and

a unit configured to assume control by said standby processor unit when a failure is detected in said active processor unit and wherein all states of said link protocol immediately function as if the failure had not occurred.

45-50. (Cancelled).

51. (Currently Amended) A computer program embodied on a computer readable medium, the computer program product for implementing Open Shortest Path First (OSPF) redundancy and being configured to perform:

providing a router having an active processor means and a standby processor means;

building a removable hidden OSPF interface on said active processor means and a hidden OSPF interface on said standby processor means for each area during initial synchronization, each area being a group of contagious networks and attached hosts, the hidden OSPF interface on said active processor means and the hidden OSPF interface on said standby processor means being unexposed and at least one hidden adjacency for synchronizing ~~database~~ databases on the active processor means and on the standby

processor means being automatically built for each area over the hidden OSPF interface on said active processor means and the hidden OSPF interface on said standby processor means;

connecting said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby processor means over a communications link;

synchronizing an OSPF routing database using an OSPF network link protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor means and said hidden OSPF interface of said standby processor means reach a full adjacency state;

transferring OSPF network link protocol information from said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby processor means over said communications link to mirror states of said active processor means and said standby processor means by maintaining a synchronization state machine for each task within a protocol;

removing said hidden interface of said active processor means and said hidden interface of said standby processor means; and

assuming control by said standby processor means when a failure is detected in said active processor means and wherein all states of said link protocol immediately function as if the failure had not occurred.

52. (New) An apparatus, comprising:

an active processor unit;

a standby processor unit;

a unit configured to build a removable hidden Open Shortest Path First (OSPF) interface on said active processor unit and a hidden OSPF interface on said standby processor unit for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit being unexposed and at least one hidden adjacency for synchronizing databases on the active processor unit and on the standby processor unit being automatically built for each area over the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit;

a unit configured to connect said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over a communications link;

a unit configured to synchronize an OSPF routing database using an OSPF network link protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor unit and said hidden OSPF interface of said standby processor unit reach a full adjacency state;

a unit configured to transfer OSPF network link protocol information from said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over said communications link to mirror states of said active processor unit and standby processor unit;

a redundant card manager to maintain a synchronization state machine of said states for tasks of said OSPF protocol;

a unit configured to remove said hidden interface of said active processor unit and said hidden interface of said standby processor unit; and

a unit configured to assume control by said standby processor unit when a failure is detected in said active processor unit and wherein all states of said link protocol immediately function as if the failure had not occurred.

53. (New) The apparatus of claim 52, wherein said OSPF protocol information is OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information.

54. (New) The apparatus of claim 52, wherein said OSPF configuration information is determined from Command Line Interface commands stored in a datastore.

55. (New) The apparatus of claim 52, further comprising:

a unit for updating network link protocol information at said active processor unit; and

a unit for forwarding said updated network link protocol information to said standby processor unit.

56. (New) The apparatus of claim 52, wherein said forwarding is a process based in a Database Exchange Process of the OSPF protocol.

57. (New) The apparatus of claim 52, further comprising:

a unit for processing identical OSPF packets after synchronizing said link configuration and link protocol states between said active processor and said standby processor.

58. (New) The apparatus of claim 53, wherein said unit configured to transfer OSPF network link protocol information comprises:

a unit for creating a hidden OSPF interface on for each area of said active processor;

a unit for creating a hidden OSPF interface for each area of said standby processor; and

a unit for forwarding said link-state database information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor until said link state database of said standby processor is synchronized with said link state database of said active processor.

59. (New) The apparatus of claim 58, wherein said unit configured to transfer OSPF network link protocol information comprises forwarding said OSPF configuration information, said OSPF adjacencies information, said OSPF interface information and said OSPF global protocol information using said hidden OSPF interface of said active processor and said hidden OSPF interface of said standby processor.

60. (New) The apparatus of claim 52, wherein said OSPF network link protocol information is transferred through said redundant card manager.

61. (New) The apparatus of claim 60, further comprising a task manager for determining said OSPF network link protocol states of said tasks and transferring said OSPF network link protocol states to said redundant card manager.

62. (New) The apparatus of claim 60, wherein said unit for switching said router to said standby processor comprises a software redundancy manager which interacts with said redundant card manager to indicate switch over from said active processor to said standby processor.

63. (New) The apparatus of claim 60, wherein said state of said tasks enters an OSPF_FAULT_INIT state which is an initial state before coupling of standby processor to said active processor.

64. (New) The apparatus of claim 60, wherein said state of said tasks enters an OSPF_FAULT_VERIFY state which is entered during synchronization of said link configuration of said active processor and said standby processor.

65. (New) The apparatus of claim 60, wherein said state of said tasks enters an OSPF_FAULT_SYNC state during forwarding of said OSPF network link protocol information from said active processor to said standby processor, said OSPF network link protocol information comprising link-state database information, Open Shortest Path First (OSPF) configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information.

66. (New) The apparatus of claim 60, wherein said state of said tasks enters an OSPF_FAULT_FULL state after said transferring OSPF network link protocol information, said OSPF_FAULT_FULL state is a hot standby state wherein said standby state can immediately take over all operations of said standby processor.

67. (New) The apparatus of claim 52, wherein said active processor is an active Open Shortest Path First (OSPF) control card.

68. (New) The apparatus of claim 52, wherein said standby processor is a standby Open Shortest Path First (OSPF) control card.

69. (New) An apparatus, comprising:

active processor unit means for processing;

standby processor unit means for processing;

building means for building a removable hidden Open Shortest Path First (OSPF) interface on said active processor unit and a hidden OSPF interface on said standby processor unit for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit being unexposed and at least one hidden adjacency for synchronizing databases on the active processor unit and on the standby processor unit being automatically built for each area over the hidden OSPF interface on said active processor unit and the hidden OSPF interface on said standby processor unit;

connecting means for connecting said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over a communications link;

synchronizing means for synchronizing an OSPF routing database using an OSPF network link protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor unit and said hidden OSPF interface of said standby processor unit reach a full adjacency state;

transferring means for transferring OSPF network link protocol information from said hidden OSPF interface of said active processor unit to said hidden OSPF interface of said standby processor unit over said communications link to mirror states of said active processor unit and standby processor unit;

redundant card manager means for maintaining a synchronization state machine of said states for tasks of said OSPF protocol;

removing means for removing said hidden interface of said active processor unit and said hidden interface of said standby processor unit; and

control means for assuming control by said standby processor unit when a failure is detected in said active processor unit and wherein all states of said link protocol immediately function as if the failure had not occurred.

REASONS FOR ALLOWANCE

4. The following is an Examiner's Statement of Reasons for Allowance:

Claims 1-13 are allowable over the prior art of record.

The examiner has found that the prior art of record does not teach or suggest or render obvious a method, system, computer program product, and an apparatus for implementing Open Shortest Path First (OSPF) redundancy in a router having an active and a standby processors, wherein a removable hidden Open Shortest Path First (OSPF) interface is built on said active processor means and standby processor for each area during initial synchronization, each area being a group of contagious networks and attached hosts, the hidden OSPF interface on said active processor and standby processor being unexposed and at least one hidden adjacency for synchronizing databases on the active processor and standby processor being automatically built for each area over the hidden OSPF interface on said active processor and standby processor; transferring OSPF network link protocol information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor and maintaining a synchronization state machine for each task within a protocol; assuming control by said standby processor when a failure is detected in said active processor and wherein all states of said link protocol immediately function as if the failure had not occurred as set forth in the specification and recited in the independent claims.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawki S Ismail whose telephone number is 571-272-3985. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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